

B(4)

SAFETY DATA SHEET

B(4)

Substance No.: B(4)
Version 4.2

Revision Date 04/02/2015
Print Date 12/29/2015

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : B(4)

Product Use Description : Intermediate for electronic industry

Company : EMD Performance Materials Corp.
An affiliate of Merck KGaA, Darmstadt Germany
One International Plaza, Suite 300
Philadelphia, PA 19113

Telephone : 1-888-367-3275

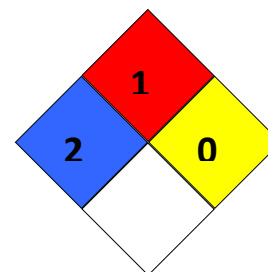
Emergency telephone number : 1-800-424-9300 (CHEMTREC)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

HMIS Classification : Health hazard: 2
Flammability: 1
Reactivity: 0
PPE:X

NFPA Classification : Health hazard: 2
Fire Hazard: 1
Reactivity Hazard: 0
Special Hazards: NONE



GHS Classification

Hazard category, Hazard class : Acute toxicity, Category 4, Oral

Hazard category, Hazard class : Acute toxicity, Category 4, Dermal

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class

Hazard category, Hazard
class

Skin Irritation, Category 2

Hazard category, Hazard
class

Serious eye damage/eye irritation, Category 1

Hazard category, Hazard
class

Reproductive toxicity, Sub-category 1B

GHS-Labeling

Symbol(s)



Signal word

: Danger

Hazard statements

: Harmful if swallowed.
Harmful in contact with skin.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child.

Precautionary statements

: **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep only in original container.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Wear protective gloves/ eye protection/ face protection.
Response:
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention. Specific treatment (see supplemental first aid instructions on this label).
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
Absorb spillage to prevent material damage.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Disposal:

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Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Hazardous ingredients**

Component	CAS-No.	Weight percent
1,2-Propanediol	57-55-6	50 - 60
1-Methyl-2-pyrrolidone	872-50-4	40 - 45
Tetramethylammonium hydroxide	75-59-2	< 4

SECTION 4. FIRST AID MEASURES**First aid procedures**

- Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.
- Skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
- Eye contact : Remove contact lenses. Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.
- Ingestion : Keep respiratory tract clear. If conscious, drink plenty of water. Never give anything by mouth to an unconscious person. Obtain medical attention.

SECTION 5. FIREFIGHTING MEASURES**Flammable properties**

Flash point : > 200 °F (> 93 °C)

Fire fighting

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- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Further information : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Cool containers/tanks with water spray.

Protective equipment and precautions for firefighters

- Specific hazards during firefighting : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10).

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Environmental precautions : Do not allow entry to drains, water courses or soil. Prevent spreading by use of suitable barriers. Local authorities should be advised if significant spillages cannot be contained.
- Methods for containment / Methods for cleaning up : Wearing appropriate personal protective equipment, contain spill, ventilate area of spill or leak, remove all sparking devices or ignition sources, collect onto inert absorbent, and place in a suitable container.

SECTION 7. HANDLING AND STORAGE**Handling**

- Handling : Do not breathe vapours or spray mist. Do not get on skin or clothing. For personal protection see section 8. Use only in area provided with appropriate exhaust ventilation.
- Advice on protection against fire and explosion : Keep away from heat and sources of ignition. Take measures to prevent the build up of electrostatic charge. Avoid shock and friction.

Storage

- Further information on : Keep container tightly closed in a dry and well-ventilated

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storage conditions

place.
May liberate combustible solvent vapors.
Store at appropriate temperature. See label for details.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Components with workplace control parameters

Components	CAS-No.	Control parameters	Basis
1-Methyl-2-pyrrolidone	872-50-4	TWA: 10 ppm	US WEEL
1,2-Propanediol	57-55-6	TWA: 10 mg/m3	

Engineering measures

Engineering measures : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Eye protection : Safety eyewear to protect against splashes.

Hand protection : Solvent-resistant gloves

Skin and body protection : Clothing suitable to prevent skin contact.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.
Respirator with combination filter for vapour/particulate (EN 141)
Use NIOSH approved respiratory protection.

Hygiene measures : Observe the usual precautions when handling chemicals.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : liquid

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dark amber

Odor : musty

Safety data

Flash point : > 200 °F (> 93 °C)

Vapour pressure : app. 0.2 Torr

Density : 1.035 g/cm³

Water solubility : completely miscible

VOC : 1,000 g/l

Loss on drying : > 96 %

SECTION 10. STABILITY AND REACTIVITYConditions to avoid : Avoid contact with oxidizing agents.
Avoid contact with strong acids.Hazardous decomposition products : Hazardous decomposition products due to incomplete combustion
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

Hazardous reactions : Hazardous polymerisation does not occur.

Chemical stability : Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Data for B(4)

Further information : No toxicological testing was carried out on the preparation.

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Acute oral toxicity : LD50 Oral: 3,605 mg/kg
Species: rat
Source : Supplier MSDS

Acute inhalation toxicity : LC50: > 5.1 mg/l
Exposure time: 4 h
Species: rat
Source : Supplier MSDS

Acute dermal toxicity : LD50 Dermal: 5,000 mg/kg
Species: rat
Source : Supplier MSDS

Skin irritation : Species: rabbit
Result: Skin irritation
Method: Draize Test
Source : Supplier MSDS

Eye irritation : Species: rabbit
Result: Eye irritation
Method: Draize Test
Source : Supplier MSDS

Data for 1,2-Propanediol (57-55-6)

Acute oral toxicity : LD50: 30,000 mg/kg
Species: rat

Acute inhalation toxicity : LC50: > Saturation
Species: rat

Acute dermal toxicity : LD50: > 10,000 mg/kg
Species: rat

Data for 25% Tetramethylammonium hydroxide (75-59-2)

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Acute oral toxicity : LD50: 136 mg/kg
Species: rat

Acute dermal toxicity : LD50: 25 mg/kg
Species: Guinea pig

Skin irritation : Result: Corrosive
Classification: Corrosive

Eye irritation : Result: corrosive
Classification: Corrosive

SECTION 12. ECOLOGICAL INFORMATION

Data for B(4)

Additional ecological information : No ecological testing was carried out on the preparation.

Data for N-Methyl-2-Pyrrolidone (872-50-4)

Ecotoxicity effects

Toxicity to fish : LC50: > 500 mg/l Exposure time: 96 h
Species: Salmo gairdneri
static Source : Supplier MSDS

Toxicity to daphnia and other aquatic invertebrates : EC50: > 1,000 mg/l
Exposure time: 24 h
Species: Daphnia magna
Method: DIN 38412 T.11
Source : Supplier MSDS

Toxicity to algae : EC50: > 500 mg/l
Exposure time: 72 h
Species: Green algae
Method: DIN 38412 T.9
Source : Supplier MSDS

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Toxicity to bacteria : EC50: > 600 mg/l
Exposure time: 0.5 h
Species: activated sludge, industrial
Method: ISO 8192

Elimination information (persistence and degradability)

Biodegradability : aerobic BOD in % of theoretical OD
Result: Readily biodegradable (according to OECD criteria)
73 %
Method: OECD 301C; ISO 9408; 92/69/EEC, C.4-F
Source : Supplier MSDS

Data for 1,2-Propanediol (57-55-6)**Ecotoxicity effects**

Toxicity to fish : LC50: 50,000 mg/l

Toxicity to daphnia and other aquatic invertebrates : EC50: > 4,850 mg/l

Data for 25% Tetramethylammonium hydroxide (75-59-2)**Ecotoxicity effects**

Toxicity to fish : LC50: 35.1 mg/l

Toxicity to daphnia and other aquatic invertebrates : LC50: 55.6 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Toxicity to algae : EC50: > 1,000 mg/l
Exposure time: 72 h
Species: Scenedesmus subspicatus
Method: OECD 201

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Biodegradability : Readily biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Dispose of as hazardous waste in compliance with local and national regulations.
This product would be considered a hazardous waste under RCRA due to high pH unless neutralized prior to disposal.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

RCRA hazardous waste : RCRA number: D002
Yes -- If it becomes a waste as sold.

SECTION 14. TRANSPORT INFORMATION**DOT**

Not restricted

IATA

UN number : 1835
Description of the goods : Tetramethylammonium hydroxide, solution
Class : 8
Packing group : III
Labels : 8
Environmentally hazardous : no
Additional data for transport : PASSENGER AIRCRAFT SHIPMENT OF CONTAINERS >2.5L NOT PERMITTED. CARGO AIRCRAFT ONLY!, CARGO AIRCRAFT SHIPMENT OF CONTAINERS >5L NOT PERMITTED.

IMDG

UN number : 1835
Description of the goods : TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION
Class : 8
Packing group : III

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Labels : 8
EmS Number 1 : F-A
EmS Number 2 : S-B

Marine pollutant : no
Environmentally hazardous : no
Additional data for transport : 18 - Alkalis

SECTION 15. REGULATORY INFORMATION**Notification status**

TSCA : All components of this product are listed on the TSC Inventory.

DSL : All components of this product are on the Canadian DSL.

WHMIS Classification : D1A: Very Toxic Material Causing Immediate and Serious Toxic Effects
D2B: Toxic Material Causing Other Toxic Effects
E: Corrosive Material

Canadian PBT Chemicals : This product does not contain any components on the DSL that are classified as Persistent, Bioaccumulative and Toxic (PBT) under CEPA.

CERCLA Reportable Quantity :
This material does not contain any components with a CERCLA RQ.

Carcinogenicity

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH No component of this product present at levels greater than or

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equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 304 Extremely Hazardous Substances : This material does not contain any components with a section 304 EHS RQ.

SARA 313: The following components are subject to reporting levels established by SARA Title III, Section 313:

SARA 313 Components : 1-Methyl-2-pyrrolidone 872-50-4

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

US. Clean Air Act - Hazardous Air Pollutants (HAP)

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

US. Clean Air Act Section 112(r); Regulated toxic and flammable substances for Accidental Release Prevention - 40 CFR 68.130 (subpart F)

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

US. Clean Air Act Section 111 SOCM I Intermediate or Final Volatile Organic Compounds (VOC) - 40 CFR part 60.489

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

1,2-Propanediol 57-55-6

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

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This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

US State Regulations

Massachusetts Right To Know Components	: 1-Methyl-2-pyrrolidone	872-50-4
Pennsylvania Right To Know Components	: 1,2-Propanediol	57-55-6
	1-Methyl-2-pyrrolidone	872-50-4
New Jersey Right To Know Components	: 1,2-Propanediol	57-55-6
	1-Methyl-2-pyrrolidone	872-50-4
	Tetramethylammonium hydroxide	75-59-2
California Prop. 65 Components	: WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.	
	1-Methyl-2-pyrrolidone	872-50-4

SECTION 16. OTHER INFORMATION

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. For any sub-heading within any section not addressed herein, no relevant information is determined or applicable. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

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